

distribution over the liquid crystal display panel 22. The light source 26 is preferably a cold cathode fluorescent lamp of an elongate construction extending essentially the entire length of the edge surface of the panel adjacent to which it is installed.

The liquid crystal display case 20 is provided with an illumination aperture 38. The illumination aperture 38 can be formed by boring through the display case 20 during fabrication of the case 20. Extending from an edge surface of the LCD case 20 to the light distribution medium 24, the illumination aperture is sized to receive a second light distribution medium. The aperture 38 is disposed proximate to the keyboard 18. In one embodiment of the invention, a plurality of apertures are provided to ensure sufficient illumination is transmitted to the keyboard. Although other arrangements are contemplated, in one embodiment, two apertures are disposed on each side of the liquid crystal display. Additionally, two illumination apertures are provided beneath the liquid crystal display.

The second light distribution medium is provided to transmit light from the light distribution medium 24, located behind the liquid crystal display panel 22, to the computer keyboard 18. In one embodiment, the second light distribution mechanism are lenses 40. The lenses 40, having an outer surface 34, are disposed integrally within the illumination aperture 38. One end of each lens is disposed adjacent to the light distribution medium 24. The outer surface 34 of each lens is disposed relatively flush with the LCD panel 22, such that light may be transmitted from the light distribution medium 24 to the keyboard 18.

As shown in FIG. 3, each lens 40 is sized to be received within the illumination aperture 38. The outer shape of the lens 40 corresponds to the shape of the illumination aperture 38. The profile of the lens 40 is slightly convex (not shown) such that light is not directed in one particular direction, but illuminates a field proximate the lens. In one embodiment, the lens 40 and the respective illumination aperture 38 are square shaped. Another embodiment provides a lens 40 and aperture 38 having a circular shape, although any shape may be used.

When assembled, each lens 40 may be secured to the display case 20 when it is inserted into the illumination aperture 38. The lenses 40 are sized such that when secured, the exterior surface of each lens 40 is substantially aligned with an exterior surface of the display case. The lenses 40 may be fabricated from a plastic material such as acrylic, glass, or any material which permits the transmission of light through the lens 40 sufficient to illuminate at least a portion of the keyboard 18.

The lenses 40 may be secured to the LCD case 20 by a number of attachment methods known in the art. For instance, the lens 40 may be integrally molded within the display case 20, the lens 40 can be ultrasonically welded to the display case 20, an adhesive substance can be applied between the lens 40 and the display case 20, or a sealing gasket can be provided between the lens 40 and the display case 20 such that impurities from the environment are not admitted into the internal computer components.

In an alternative embodiment, as shown in FIG. 3, a door member 44 is provided. The door member 44 is slidably mounted within a surface of the liquid display case 20, adjacent to the illumination aperture 38. Each door member 44 is sized to cover a corresponding lens 40. Preferably, the door member 44 is substantially flat, thereby eliminating

interference with the keyboard 18 when the lap top computer is in a closed position. A computer user may slide the door member 44 over the lens 40 to limit the amount of illumination provided to the keyboard 18. If the user does not desire to have any illumination provided by the lighting apparatus, the door member 44 can be extended fully over the illumination aperture 38, thereby substantially preventing light from being transmitted through the lens 40 to the keyboard 18.

The current invention efficiently uses a current lighting source for a computer system. The lighting apparatus provides illumination for the keyboard and surrounding work area without requiring additional power or an additional light source. Furthermore, it allows a computer user to view the keyboard while working in surroundings having limited ambient light.

It is to be understood that the above description is intended to be illustrative, and not restrictive. Many other embodiments will be apparent to those of skill in the art upon reviewing the above description. For instance, an illumination aperture and lens may be provided on other surfaces of the computer for providing light to a surrounding work area. The scope of the invention should, therefore, be determined with reference to the appended claims, along with the full scope of equivalents to which such claims are entitled.

What is claimed is:

1. A lighting apparatus for illuminating a keyboard on a lap top computer, comprising:

a light source for backlighting a liquid crystal display screen, said light source including a light distribution medium;

a liquid crystal display case, the liquid crystal display case having at least one illumination aperture therein; and

a door member slidably mounted on said screen body for covering said illumination apertures, said door member being adjustably mounted thereon.

2. The lighting apparatus as recited in claim 1, wherein the light source is a cold cathode fluorescent lamp placed adjacent the light distribution medium.

3. The lighting apparatus as recited in claim 1, wherein the light distribution medium is a light pipe.

4. The lighting apparatus as recited in claim 1, wherein the at least one illumination aperture is disposed below the liquid crystal display screen.

5. The lighting apparatus as recited in claim 1, wherein the at least one illumination aperture is disposed on at least one side of the liquid crystal display screen.

6. The lighting apparatus as recited in claim 1, wherein the liquid crystal display case has a plurality of illumination apertures.

7. The lighting apparatus as recited in claim 1, wherein the at least one illumination aperture has a lens disposed therein.

8. The lighting apparatus as recited in claim 7, the at least one illumination aperture and an outer surface of the corresponding lens having a square or rectangular shape.

9. The lighting apparatus as recited in claim 7, the at least one illumination aperture and an outer surface of the corresponding lens having a circular shape.

10. A lighting apparatus for illuminating a keyboard on a lap top computer, comprising: